

Applicant: Joseph A. Kwak
Application No.: 10/084,043

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for adjusting data modulation at a base station comprising:

receiving data in data blocks from a higher layer ARQ mechanism at a transmitter for transmission;

formatting the received data into packets for transmission, the packets being smaller in size than the data blocks, and each packet having a particular type of encoding/data modulation;

appending an error check sequence for each packet;

providing a physical layer ARQ mechanism performing steps including:

transmitting the packets;

storing the packets for retransmission in a buffer memory incorporated into the transmitter;

monitoring a return channel for receipt of an acknowledgment for each packet that the packet has been received;

limiting the number of retransmissions to an operator-defined integer value;

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clearing the buffer memory after the integer value is reached; and
retransmitting an original or selectively modified packet at the transmitter in response to failure to receive a corresponding acknowledgement for a given packet, if an acknowledgement for that packet has not been received; wherein the physical layer ARQ mechanism operates transparently with respect to the higher layer ARQ mechanism;
receiving a corresponding acknowledgement for a given packet;
collecting retransmission statistics and adjusting the particular data/modulation using the collected statistics;
demodulating received packets;
buffering, decoding, and detecting packet errors; and
generating an acknowledgement for each received packet if that packet has an acceptable error rate.
~~- wherein the retransmitted original or selectively modified packets are combined with originally transmitted packets.~~

2. (Original) The method of claim 1 wherein the particular type of encoding/data modulation is forward error correction (FEC).

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3. (Original) The method of claim 2 wherein the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and the particular FEC encoding/data modulation adjusting is performed in addition to selective nulling of subchannels in an OFDMA set.

4. (Original) The method of claim 1 wherein the packets are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface.

5. (Original) The method of claim 1 wherein the return channel is the fast feedback channel when the packets are transmitted using a code division multiple access (CDMA) air interface.

6. (Original) The method of claim 1 further comprising:
identifying a packet as having an unacceptable error rate responsive to receipt of a negative acknowledgment.

7 - 9. (Canceled).

10. (Previously presented) The method of claim 1 wherein the physical

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layer ARQ mechanism reduces retransmissions required by the higher layer ARQ mechanism.

11. (Currently Amended) A method for adjusting data modulation at a base station in orthogonal frequency division multiple access (OFDMA) system, the method comprising:

receiving data in data blocks from a higher layer ARQ mechanism at a transmitter for transmission;

formatting the received data into packets for transmission, the packets being smaller in size than the data blocks, and each packet having a particular type of encoding/data modulation;

appending an error check sequence for each packet;

providing a physical layer ARQ mechanism performing steps including:

transmitting the packets;

storing the packets for retransmission in a buffer memory incorporated into the transmitter;

monitoring a return channel for receipt of an acknowledgment for each packet that the packet has been received;

limiting the number of retransmissions to an operator-defined integer value;

clearing the buffer memory after the integer value is reached;

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varying subchannels used for transmitting the packets; and
retransmitting selectively modified packets at the transmitter in
response to failure to receive a corresponding acknowledgement for a given
packet, if an acknowledgement for that packet has not been received; wherein
the physical layer ARQ mechanism operates transparently with respect to
the higher layer ARQ mechanism;
receiving a corresponding acknowledgement for a given packet;
collecting retransmission statistics and adjusting the particular
data/modulation using the collected statistics;
demodulating received packets;
buffering, decoding, and detecting packet errors; and
generating an acknowledgement for each received packet if that packet has
an acceptable error rate.
~~- wherein the retransmitted original or selectively modified packets are~~
~~combined with originally transmitted packets.~~